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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,053	08/20/2001	Rolf Heinemann	SBV-07699	6719

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EXAMINER	
FULLER, ERIC B	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/933,053	HEINEMANN ET AL	
	Examiner	Art Unit	
	Eric B Fuller	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1 and 3-12* is/are allowed.

6)☒ Claim(s) *13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer et al. (US 5,080,056) in view of Sailer et al. (US 5,644,828) and Hammeke (US 4,724,299), and further in view of Pfeffinger et al. (US 6,221,504 B1).

Kramer teaches alloying and coating the interior walls of cylinder bores with a wear resistant material (column 2, lines 12-16) by thermal spraying (column 2, lines 17-29). Kramer further teaches that the powder material used for coating/alloying is an aluminum/silicon alloy (column 4, line 7). The coating is deposited onto and alloyed into the substrate. The reference cited examples of plasma spraying and arc spraying as suitable forms of thermal spraying, but does not limit the invention to such. However, the reference fails to explicitly teach laser spraying as a suitable form of thermal spraying.

Sailer teaches that plasma spraying, arc spraying, and laser spraying are all equivalent forms of thermal spraying. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize laser

spraying as the method of thermal spraying in Kramer with a reasonable expectation of similar results, as Sailer teaches equivalence. However, Sailer fails to teach how the method of laser spraying is performed.

Hammeke teaches a method of laser spraying wherein the coating powder is fed through a laser apparatus such that the apparatus may be used to coat complexly shaped substrates uniformly and quickly (column 5, lines 17-25). The powder is fed coaxially with the laser beam and is converged on a common focal point with the laser beam that creates a melt pool in the substrate (column 2, lines 15-20). One of ordinary skill would recognize that since the powder stream and laser are one elongated device, such an arrangement would be ideal for fitting into the small diameters bores of Kramer. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a laser spraying method such as that taught by Hammeke in order to form the alloy/coating of Kramer. By doing so, one would have a reasonable expectation of success, as Sailer teaches the equivalence of laser spraying with other forms of thermal spraying. Modifications to the apparatus of Hammeke so that the inner wall of a cylinder is coated as opposed to an area directly below the nozzle, such as deflecting the laser beam and powder streams towards the wall, are all within the skill of one practicing in the art when taken in view of figure 2A of Kramer.

The above-cited references fail to explicitly teach using an additional laser treatment in order to deposit oil pockets. However, Pfeffinger teaches that additional thermal spraying treatments may be used to deposit lubricants into the interior walls of cylinder bores in order to increase the tribological characteristics of the coating (column

3, lines 35-40; abstract). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to use additional thermal spraying treatments in Kramer in order to deposit oil pockets such that the tribological characteristics of the coating/alloy is increased. For the same reasons as above, to use laser spraying as the thermal spraying means would have been obvious with the expectation of achieving similar results, as taught by Sailer.

Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kramer et al. (US 5,080,056) in view of Sailer et al. (US 5,644,828) and Hammeke (US 4,724,299) and Pfeffinger et al. (US 6,221,504 B1), as applied to claims 13 and 15 above, and further in view of Beyer et al. (US 6,197,386 B1).

The above-cited references are used for teaching the limitations of claims 13 and 15, but they fail to teach the use of mirrors to direct the laser beam to the inner wall of the substrate. However, Beyer teaches the use of a mirror in order to deflect a laser beam such that it hits a desired location on a substrate (figure 1, reference 4). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use a mirror to deflect the laser beam. By doing so, the laser beam is directed to the desired location.

Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura et al. (US 5,912,057) in view of Hammeke (US 4,724,299).

Nishimura teaches a method of cladding the interior of a cylinder crankcase by simultaneously directing a laser and powder spray at the same location inside the cylinder (column 3, lines 1-24). The overlayer reads on the additional laser treatment (column 3, lines 25-35). The coating comprises a nickel component (column 5, lines 1-10). The reference fails to explicitly teach having the powder to sprayed through the laser. However, Hammeke teaches a method of laser spraying wherein the coating powder is fed through a laser apparatus such that the apparatus may be used to coat complexly shaped substrates uniformly and quickly (column 5, lines 17-25). The powder is fed coaxially with the laser beam and is converged on a common focal point with the laser beam that creates a melt pool in the substrate (column 2, lines 15-20). One of ordinary skill would recognize that since the powder stream and laser are one elongated device, such an arrangement would be ideal for fitting into the small diameters bores of Nishimura. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize a laser spraying method such as that taught by Hammeke in order to form the alloy/coating of Nishimura. By doing so, one would reap the benefits of forming the coating uniformly and quickly. Modifications to the apparatus of Hammeke so that the inner wall of a cylinder is coated as opposed to an area directly below the nozzle, such as deflecting the laser beam and powder streams towards the wall, are all within the skill of one practicing in the art. As the spray apparatus is rotated, as is taught by Nishimura, so is the laser, as they are one unit.

Allowable Subject Matter

Claims 1-12 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Applicant's perfection of foreign priority and the corresponding arguments filed June 9, 2004 are sufficient in over coming the rejections of the previous Office Action.

Response to Arguments

Applicant's arguments, along with the perfection of foreign priority, have been found convincing in overcoming the rejections of the method claims. These rejections have been withdrawn accordingly and the claims are considered allowable.

Applicant's arguments with respect to the apparatus claims have not been found convincing. Applicant argues that the prior art fails to teach the positioning and motion of the laser, as has been added by amendment. This argument is not found convincing. The limitations drawn to the position and motion of the laser do not provide any structural differences to the apparatus. These limitations are intended use limitations, which do not carry patentable weight since the apparatus is structurally the same with or without these limitations. It is noted that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because no structural differences between the prior art and the

apparatus claims have been argued, the examiner maintains the rejections for the apparatus claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B Fuller whose telephone number is (571) 272-1420. The examiner can normally be reached on Mondays through Thursdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck, can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EBF

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